

THE UNIVERSITY OF KANSAS SCIENCE BULLETIN

VOL. XXX, pt. I]

MAY 15, 1944

[No. 5

A New Ambystomid Salamander from the Plateau Region of Mexico

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ABSTRACT: A salamander, *Ambystoma granulosum*, from the high plateau region of western México, México, is described. It is related to *Ambystoma bombypellum* Taylor.

A SPECIES of salamander, together with large numbers of salamander larvae, was obtained in shallow artificial ponds in the high prairie regions of western México (state). The dermal glands give the surface of the adult animal a somewhat granular appearance particularly if the glands are gorged, or the skin is slightly shrunken. There is no absolute proof that the larvae taken are the young of the species, but it is highly probably that they are.

Ambystoma granulosum sp. nov.

Type. EHT-HMS, No. 29805, collected at km. 74, about 12 miles northwest of Toluca, México, México, Sept. 10, 1939, by Edward H. Taylor and Hobart M. Smith.

Paratypes. Adults: EHT-HMS, No. 29804, collected with type; Nos. 24042-24044, at km. 70, northwest of Toluca, Sept., 1940, by Richard Clark Taylor and E. H. Taylor. Larvae: EHT-HMS, Nos. 24045-24250, kms. 70-74, 10-12 miles northwest of Toluca, México; U. S. N. M. Nos. 116630-116653, kms. 70-73, same locality. Taylor and Smith collectors.

Diagnosis. Related to *Ambystoma bombypellum*, but with a shorter, more elevated tail; body distinctly more elevated; limbs proportionally longer, the head shorter and broader. Color greenish or yellowish-olive to brown-olive above with numerous small black

spots. Yellowish or yellowish-brown on sides and venter, without marks. Tail spotted black like the back.

Description of the type. Head moderately high, its greatest width behind jaw angle (23 mm.) greater than measurement from tip of snout to gular fold (20 mm.), but less than distance from tip of snout to the gular groove, dorsally (30.2 mm.); length of eye (3.5 mm.), less than distance to nostril (4.8 mm.); distance between nostrils, 5.9 mm.; distance between orbits, 8 mm.; eyelid width, 1.8 mm.; length of snout, 7.2 mm.

A large, transversely oval, palatal pit; choanae transversely oval, the distance between them 7 mm.; prevomeropalatine teeth on a somewhat arched ridge, extending across palate, with a slight diastema between the prevomerine and palatine series; a slight indication of a mesial break in the dental ridge, but the teeth here are continuous. About 48-48 maxillary-premaxillary teeth, and approximately the same number of mandibular teeth, the latter forming a rather irregular series; about 11-13 prevomerine teeth; 9 palatine teeth.

Tongue rather small with longitudinal lamella (larger tongues in older specimens). The larval skinfold at corner of mouth still evident as a small flap on the upper lip and a small fold on back part of lower lip; no trace of splenial teeth.

Skin above finely corrugated or granular, more especially granular in caudal region; a groove behind eye curving down to near corner of mouth; gular fold prominent; the skin of chin forming longitudinal folds; a deep groove passing from corners of gular fold, half-way to the median dorsal line.

A double series of enlarged pits beginning medial to the nostrils and running back above orbit, then down behind it; another series of pits beginning behind nostril and covering much of the area below eye; another single series on the lower jaw. The dorsolateral, lateral and lateroventral neuromast organs represented by a few scattered pores. Twelve costal grooves, all of which can be traced across abdomen; limbs of moderate length; when adpressed the longest toes reach the wrist; an inner and an outer tubercle on palm and sole. Fingers 1, 4, 2, 3, in order of increasing length; toes 1, 5, 2, 3, 4; the distal part of metacarpals and metatarsals free; an indistinct ridge from outer toe onto tarsus; caudal fin thickened, scarcely distinguishable from remainder of tail; subcaudal fin much reduced and not or but little thickened; tail a little shorter than head and body; median part of tail deeper than base; cloacal walls with folds and with a small projection from the anterior part.

Color. Yellowish-olive above and on sides, darker on dorsum; venter dirty, or yellowish-flesh with a few scattered black spots on dorsum extending onto the sides; tail similarly marked.

Table of measurements (in mm.) of type and paratypes of
Ambystoma granulosum.

Number	29805	29804	24042	24043	24044
Sex	♂	♀	♀	♂	♂
Snout to back end of vent.....	92	81	89	92	86
Tail length	77	62	75	74	71
Head, greatest width.....	23	19	22	21	21
Head, length to gular fold (ventral),	20	20	20.2	20	19.5
Head, length to level of gular groove (dorsal)	30.2	27	28	28.8	26.3
Arm	32	26	29	29	27.5
Leg	34	28	30	32	28
Axilla to groin.....	45	38	41	45	40
Tail, depth at base.....	16	14	16	15	14
Tail, greatest depth.....	18	16	17	16.5	15
Depth of body.....	24.5	22	23.5	24	25

Description of the larvae. The largest larva, EHT-HMS, No. 24094, measures 90 millimeters snout to vent; the tail, 70. The head is broad (28 mm.); its length to base of gills, 36.5. The longest gills are 25 mm.

The dorsal fin arising at a point about on the level of the gill bases, and in the young, forms a continuous curve to end of tail, the dorsal part being most elevated near base of tail; elevation of subcaudal part of fin usually less than the dorsal, although a few specimens have it about equal to dorsal; when limbs are adpressed, tips of toes reach to elbow; web on the foot a little more extensive than in adult, involving the metatarsals to their tips.

Maxillary-premaxillary teeth in a very uneven row, appearing as if there were more than a single row of teeth; prevomerine teeth on two strongly elevated, widened ridges, about 45 teeth on each, arranged in several series, many teeth directed backwards; the tooth groups, in contact mesially, lie anterior to a line connecting the choanae; the palato-pterygoid series in two longitudinal patches each with about 45 teeth, the teeth arranged in several transverse or diagonal series. About 60 splenial teeth on each side arranged in several short series. Mandibular teeth very irregular. Tongue undeveloped.

The larvae are light flesh color with little or no spotting on the back, or elsewhere. There is some pigment in the tail fin, especially near the tip and on the underside, some specimens having this region nearly black.

The figure (2) shows such a specimen, the ventral fin being less elevated than normal.

Remarks. The oldest adults (those in which the fold had been resorbed on the back part of the lower jaw, and the upper flap much narrowed) were dark dirty olive in color, the dorsal black spots discernible with difficulty. The prevomero-palatine series of teeth tend to straighten out more across the palate, and are less arched.

I have presumed that this species is related to *Ambystoma bombypellum* Taylor, a species known only from two recently transformed adults. These latter are uniform lavender in color, and the habitus is very different. In that form the skin is very smooth and shining. The body is not elevated medially; the tail is as elevated at its base as elsewhere, and the caudal fin is not retained in the adult (see fig. Univ. Kansas Sci. Bull., Vol. 25, 1938 (1939), plate XXIV, p. 303, fig. 1).

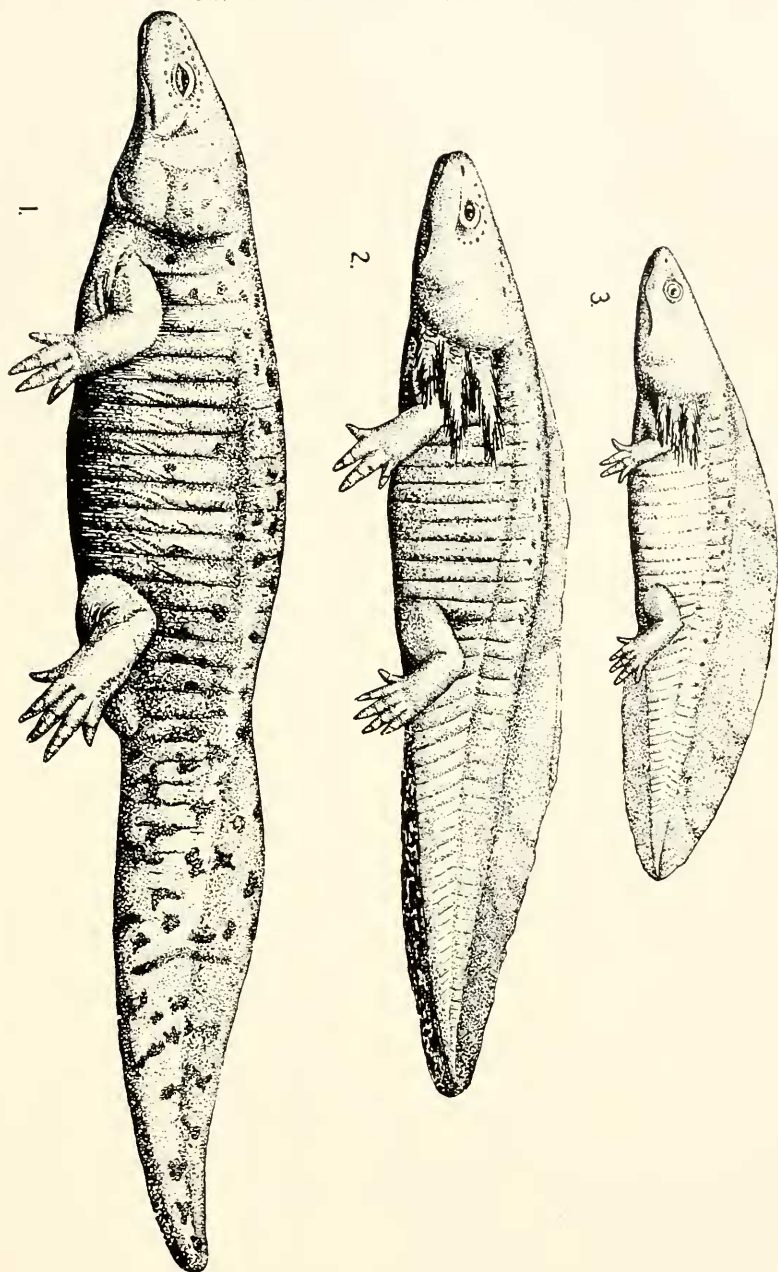
PLATE VIII. *Ambystoma granulosum* sp. nov.

FIG. 1. Type EHT-HMS No. 29805, 12 miles NW Toluca, México, México. About natural size.

FIG. 2. Larva of same, nearly full grown ($\times 1$).

FIG. 3. Larva of same, young ($\times 1$).